

Optional Features for Outdoor Learning Areas

Sky and Space

Description – Leave open grassy areas in the outdoor learning area to provide places for students to observe space and sky. Classes can gather to study cloud formation, cardinal directions, daily movement of the sun, shadow patterns, stars, constellations, planets, eclipses, moon phase observations and other astronomy related subjects. Provide a mounting pad containing a sundial, a stake for shadow studies, and a telescope mount to enhance the area.

Size – A typical size for the open area would be a 24 feet by 30 feet area, though a larger area would allow students to sit back comfortably when viewing for extended periods of time.

Location – An open viewing area, away from buildings and sources of light provides the best setting for observations. If available, a horizon-to-horizon view works best for stargazing. If lights are located near the site, be sure they can be manually turned off.



Materials Needed – Anyone can observe the sky without equipment. All you need is room to look and curiosity! However, to further enhance the site a telescope, concrete, pipe, steel cap, lugs, compass, and sundial are needed for this project. Portable back rests for each student may be helpful for night viewing

Labor Needed – Labor is needed to build the concrete mounting pad and telescope mount. If a telescope will be mounted for nighttime viewing, a simple telescope mount may be made from a 6-inch diameter schedule 40 steel pipe, filled with concrete. The height would depend on the size and type of telescope to be used. Extend the steel post 30 inches below grade level for stabilization. Add a steel cap welded to the post containing mounting lugs for the telescope's equatorial mount, size, type, and location of lugs to match the equatorial base. An 8 feet by 8 feet square, 6-inch thick concrete pad one inch above grade should be constructed around the pole. The pole may be used during the daytime for shadow studies. A sundial may be added. Use a compass for correct positioning.

- Technical Assistance – Many on-line activities are available to enhance Sky and Space Science studies. NASA web sites such as (<http://www.nasa.gov/home/index.html>) and (<http://education.nasa.gov/>) are always a plus. In Kentucky contact the East Kentucky Science Center at <http://www.wedosscience.org/> . In addition nearby colleges often have telescopes and even planetariums.

Maintenance – No maintenance is needed for the project, other than keeping the area mowed and clear of debris.

Challenges – When walking around at night, flashlights with red cellophane over the lenses are a must for safety reasons. A protective, soft covering, such as a rubber ball with a slit in it could be placed over the pipe when not in use in case someone falls on it.

Resources

- DarkSky - A Web Tool for Stargazing
<http://proxima.astro.virginia.edu/ida/darksky>
- Earth and Sky Homepage
www.earthsky.com
- Heavens Above
www.heavens-above.com

- Starchart Map Server
www.polaris.net/services/starchart
- Your Sky
www.fourmilab.to/yoursky
- Reading the Skies
www.people.virginia.edu/~tgt3e/skies
- J Track Satellite Tracking
<http://liftoff.msfc.nasa.gov/realtime/jtrack>
- Astrophotography
www.astropix.com/INDEX.HTM
- Sunrise, Sunset & Local Time
www.sunrisesunset.com/default.asp
- US EPA Sunwise School Program
<http://www.epa.gov/sunwise>
- Comets and meteor showers
<http://comets.amsmeteors.org>
- Find Your Longitude
<http://www.pbs.org/wgbh/nova/longitude/findgame.html>
- Light Pollution
<http://www.lightpollution.it/worldatlas/pages/fig1.htm>
- How to view a solar eclipse
www.exploratorium.edu/eclipse/how/html